

WHAT IS CLAIMED IS:

1. A light emitting diode of a double hetero-junction type comprising:

a light-emitting layer composed of a GaAlInP material;

5 a p-type cladding layer and an n-type cladding layer sandwiching said light-emitting layer therebetween;

a p-side electrode formed on the p-type cladding layer side; and

10 an n-side electrode formed on the n-type cladding layer side;

said p-type cladding layer consisting of a first p-type cladding layer positioned closer to said light-emitting layer and having a lower aluminum content and a lower impurity concentration, and a second p-type cladding layer positioned farther from said light-emitting layer and having a higher aluminum content and a higher 15 impurity concentration; and

a current blocking layer for locally blocking electric current flowing from said p-side electrode to said n-side electrode.

20 2. A light emitting diode according to claim 1, wherein a thickness of said first p-type cladding layer is 0.2 μm or more, but 0.5 μm or less.

25 3. A light emitting diode according to claim 1, wherein said p-side electrode has an electrode window consisting of an opening; and

said current blocking layer has an opening at a position confronting said electrode window of said p-side electrode, and said opening of the current blocking layer serves as a current path for intensively passing electric current from said p-side electrode
5 through the light emitting diode.

4. A light emitting diode according to claim 1, wherein said p-side electrode is formed at a central portion of a surface; and

10 said current blocking layer is formed at a position confronting said p-side electrode such that electric current coming from said p-side electrode flows around said current blocking layer.

5. A light emitting diode according to claim 1, further comprising a current diffusion layer, and wherein said current 15 blocking layer is formed within the current diffusion layer.

6. A light emitting diode of a double hetero-junction type in which a light-emitting layer made of a GaAlInP material is interposed between a p-type cladding layer and an n-type cladding layer, wherein:

20 a p-side electrode is formed on a p-type cladding layer-side surface having an area of 0.15 mm² or more; and

any point present in a region not containing the p-side electrode of said p-type cladding layer-side surface is within a distance of (Ld x 2) from some point on an edge of said p-side 25 electrode, where Ld is a distance from a position at which an optical

power is maximum, to a position at which the optical power attenuates by 90%.

7. A light emitting diode according to claim 6, wherein said

5 p-side electrode comprises a plurality of branch electrodes and a connection electrode connecting said branch electrodes to each other electrically.

8. A light emitting diode according to claim 7, wherein an

10 interval between said branch electrodes is approximately Ld .

9. A light emitting diode according to claim 8, wherein said surface on which the p-side electrode is formed has two opposed parallel straight sides; and

15 said branch electrodes are each strip-shaped, and arranged parallel with said two sides and with each other.

10. A light emitting diode according to claim 9, wherein an

interval between an outermost branch electrode and the side of said 20 surface opposed to this branch electrode is approximately $Ld/2$.

11. A light emitting diode according to claim 6, comprising a current diffusion layer made of a AlGaInP material and disposed between said p-type cladding layer and said p-side electrode.

12. A light emitting diode according to claim 6, comprising a barrier layer between said light-emitting layer and said p-type cladding layer, said barrier layer having a band gap intermediate between band gaps of said light-emitting layer and p-type cladding layer.

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13. A light emitting diode according to claim 12, further comprising a barrier layer between said light-emitting layer and said n-type cladding layer, said barrier layer having a band gap intermediate between band gaps of said light-emitting layer and said n-type cladding layer.

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14. A light emitting diode of a double hetero-junction type in which a light-emitting layer made of a GaAlInP material is interposed between a p-type cladding layer and an n-type cladding layer, comprising:

a current blocking layer formed on a p-type cladding layer-side surface having an area of 0.15 mm² or more; and

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a p-side electrode formed at a position above said current blocking layer and opposed to said current blocking layer,

wherein any point present in a region not containing the current blocking layer of said p-type cladding layer-side surface is within a distance of (Ld x 2) from some point on an edge of said current blocking layer, where Ld is a distance from a position at

which an optical power is maximum, to a position at which the optical power attenuates by 90%.

15. A light emitting diode according to claim 14, wherein said current blocking layer comprises a plurality of blocking branch portions and a connection portion connecting said blocking branch portions to each other electrically, and an interval between adjacent blocking branch portions is approximately Ld .

10 16. A light emitting diode according to claim 15, wherein the surface on which said current blocking layer is formed has two opposed parallel straight sides; and

said blocking branch portions are each strip-shaped and arranged parallel with said two sides and with each other.

15 17. A light emitting diode according to claim 16, wherein an interval between an outermost blocking branch portion and the side of said surface opposed to this outermost blocking branch portion is approximately $Ld/2$.

20 18. A light emitting diode according to claim 14, comprising a current diffusion layer made of an AlGaInP material and disposed between said p-type cladding layer and said p-side electrode.

19. A light emitting diode according to claim 14, comprising a barrier layer between said light-emitting layer and said p-type cladding layer, said barrier layer having a band gap intermediate between band gaps of said light-emitting layer and p-type cladding layer.
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20. A light emitting diode according to claim 19, further comprising a barrier layer between said light-emitting layer and said n-type cladding layer, said barrier layer having a band gap intermediate between band gaps of said light-emitting layer and said n-type cladding layer.
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21. A light emitting diode of a double hetero-junction type in which a light-emitting layer made of a GaAlInP material is interposed between a p-type cladding layer and an n-type cladding layer, wherein:
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- a p-side electrode is formed on a p-type cladding layer-side surface, said p-side electrode consisting of a plurality of mutually connected constituent parts; and
- any point present in a region not containing the p-side electrode of said p-type cladding layer-side surface is within a distance of $(L_d \times 2)$ from some point on an edge of said p-side electrode, where L_d is a distance from a position at which an optical power is maximum, to a position at which the optical power attenuates by 90%.
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22. A light emitting diode according to claim 21, wherein said p-type cladding layer-side surface is a surface of a current diffusion layer.
- 5 23. A light emitting diode according to claim 22, wherein the current blocking layer having a shape corresponding to that of said p-side electrode is formed inside said current diffusion layer in a position opposed to said p-side electrode.